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THE INTRADERMAL TEST.

Probably most British practitioners, when applying the tuberculin test, still rely upon the subcutaneous method alone. In so doing, they are within their rights so far; but it is not impossible that, for official testing, the authorities may ultimately require the addition of other methods. There is no doubt that, if the maximum of certainty is to be attained, at least one other method must be combined with the subcutaneous test.

When combined testing is performed in this country, the ophthalmic method is usually added to the subcutaneous. But evidence is accumulating to indicate that the intradermal test, if properly performed, is equal or superior to either of these. The recent work of Harding and Bell, of California, supports that view; and these authors add one statement, the full confirmation of which would be very important. Hitherto the only reaction to the intradermal test recognised has been the local one. If it is true, as the Californian workers state, that a thermal reaction usually accompanies the local one, the test obviously becomes much more valuable.

Few men in this country have tried the intradermal test; and the suggestion that practitioners should gain experience in it by performing it along with the ordinary subcutaneous test deserves consideration. But no one should attempt the test without realising its difficulties. Both in its application and its interpretation, it is more delicate than either the subcutaneous or the ophthalmic tests. Its application, especially, demands the most scrupulous care. A too blunt, too large, or not completely sterilised needle, clumsiness in insertion, or the use of irritant disinfectants, are each capable of producing a swelling that might be mistaken for a local reaction. But there is good reason to believe that, in the hands of men who know how to use it, the intradermal test may have a great future before it.

PATENT MEDICINES.

The Report of the Select Committee on Patent Medicines has just been published, and will satisfy neither medical men nor veterinary surgeons. Its most important recommendation is that the exact composition of all secret remedies should be revealed to a Government Department, which should have the power of prohibiting the sale of any. This will prevent most of the grosser evils of secret medicines for human beings; but it is hardly likely to greatly affect the sale of secret medicines for animals. The Committee definitely refuse to recommend that the composition of these preparations should be stated on the labels.

THE INTRADERMAL TUBERCULIN TEST FOR CATTLE AND SWINE.

The University of California has recently published a valuable bulletin of 154 pages (Bullet. No. 243, Berkeley, Cal.—University Press, Berkeley, 1914) upon this subject. It is written by Clarence M. Harding, assisted by Ralph M. Bell—both of the Division of Veterinary Science attached to the University—and contains an account of work done by them at the University's Agricultural Experiment Station. The authors agree with many other observers in considering a combination of two or more of the different methods of tuberculin testing superior to any one method used alone; and they mention a combination of the ordinary subcutaneous, the intradermal, and the ophthalmic tests as desirable. The ophthalmic test is not suitable for the average California dairy conditions, and the bulletin, which is illustrated with tables of results and figures illustrating the technique, is therefore chiefly devoted to an exposition of the intradermal test, and a comparison of its value with those of the subcutaneous and ophthalmic tests. The following is a very brief summary of the main points.

In one important particular, the authors' observations differ from those of other workers. They find that cattle which react to the intradermal test with local swelling usually have also *a thermal reaction similar to that produced by the ordinary subcutaneous injection.* Their observations give them reason to believe that the intradermal test, *when combined with observation of the thermal reaction*, is a more accurate means of diagnosis than is the usual subcutaneous test. Similarly, they find that in the subcutaneous test a local reaction is more important than is generally supposed. In order to better appreciate this local reaction, it is advisable to shave the skin at the site of injection before testing. One of the authors (Bell) prefers to perform the subcutaneous test by injecting the tuberculin through the skin of the hindquarter over the semi-membranosus muscle. He finds that that the local reactions to the subcutaneous injections are more clearly defined there than in the loose tissues of the neck. The local reactions of the subcutaneous method, however, are neither so large nor so definite as those of the intradermal method.

The authors encountered much difficulty from the lack of uniformity in the different tuberculins sold for the intradermal test. When applying the intradermal and subcutaneous tests simultaneously, they now use 1/5 (·2) c.c. *intradermal* doses of alcoholic precipitated tuberculin in 5 to 50 per cent.

solutions administered sub-caudally, and 2 c.c. doses of 10 per cent. Koch's Old Tuberculin administered, subcutaneously and take temperatures as in the usual subcutaneous test. They believe that the quantity of liquid injected intradermally should not exceed ·2c.c., and that it is better to increase the concentration of the tuberculin insetad of increasing the quantity of the dose. Tuberculin containing glycerine is better not used for the intradermal test, as the glycerine itself is liable to cause swellings which might be mistaken for reaction. Most authorities prefer to use Koch's Old Tuberculin for the intradermal test, but the authors object to it on account of its glycerine content.

The technique of intradermal injection is very important. The authors use a syringe similar to those used by dentists for injecting local anæsthetics, with a needle having a point 3/16 to 1/4 of an inch in length. The most suitable site for the injection is one of the folds of the skin on the under side of the base of the tail. The authors have used the skin of the neck in some of their cases, but find the sub-caudal fold more convenient. The sub-caudal fold is grasped between the thumb and the first two fingers of the left hand and the needle inserted horizontally into the thickness of the skin grasped between the thumb and finger. The mistake of trying to inject as near the surface of the skin as possible should not be made, as it is difficult to inject into the layers of the epidermis, and an injection into this part of the skin is of little diagnostic value. The best results are obtained when the tuberculin is injected into the deeper layers of the skin. If the dose is properly placed, the tuberculin can felt in the deeper layers of the skin, and after the removal of the needle it can still be felt as a lump about the size of a small pea; but the injection *should not* be so superficial as to leave a visible blister-like swelling upon the skin. When the proper point in the sub-caudal fold is selected, the authors think that it makes little difference whether the point of the needle is in the derma or in the sub-dermal connective tissue. The best point on the sub-caudal fold at which to inject is about 2½ or 3 inches down the tail from the anus. Elsewhere reactions are not so easily perceived; and at this point the bone and solid tissues of the tail form a background which renders the local reactions more prominent than those of the skin of the neck. A needle of the right description, properly inserted, rarely penetrates deeper than the lower layers of the derma. It should be inserted neatly and cleanly, so as to avoid traumatisms which might simulate reactions.

The authors deem it impracticable to disinfect or otherwise prepare the sub-caudal fold for the intradermal injection, except when it is soiled. In that case, they wipe the fold clean with a rag, apply 50 per cent. alcohol with absorbent cotton, and wipe with dry cotton. Before each injection, the needle should be dipped in strong disinfectant, and wiped dry with sterile absorbent cotton. After the needle has been dipped in an irritating disinfectant, it must be carefully wiped before re-insertion, or the disinfectant may cause irritation and produce a swelling which might be mistaken for a reaction. Similarly, the application of strong disinfectants to the skin at the site of injection should be avoided.

Care and experience are required to interpret the reaction. A positive intradermal reaction is indicated by a thickening of the subcaudal fold or by the appearance at the point of injection of a characteristic sensitive swelling, which varies from the size of a small pea to that of an orange, and may be either soft and œdematous or hard and inflamed. A recognisable reaction may be present at the sixth hour; but generally the reaction swelling is first clear about the twelfth hour, and continues to increase in size until the forty-eighth hour. In some cases the authors have seen the early local reactions disappear before the forty-eighth hour, while in others delayed reactions have been noted which did not appear till the nineteeth hour. In order to be certain of every case, observations must be taken at least twice, preferably about the thirty-sixth and seventy-second hours. If only one observation can be made, it should be on the seventy-second hour. *Small indurations at the point of inoculation about the size of the head of a parlour match frequently occur in normal non-reacting cattle, but anything larger than this which persists to the seventy-second hour should be considered a reaction.*

Romer and Joseph used callipers to estimate the reaction, and consider that a thickening of the skin fold more than three millimetres larger than the thickness previous to injection should be regarded as a positive reaction. They regard cases in which the increase in thickness only amounts to three millimetres as doubtful, and re-test them. The present authors, however, do not think that the measurement of the swelling is of much assistance, though for the sake of accurate records they have made a practice of taking careful measurements. The swelling may vary from the size of a pea to that of a hen's egg; but, in judging it, the observer should depend more upon the shape, appearance, tenseness, sensitiveness, and location with respect to the exact point of injection, than upon the actual measurements.

Only experience can enable an observer to be certain of a positive reaction when the local swelling is small. The intradermal reaction often leaves a more or less permanent mark which can be used to identify the reacting animals for several weeks.

It is to be emphasised that the authors do not advocate that a veterinarian should substitute the intradermal for the subcutaneous method until he has become skilled in the former by practice and observation. He can easily become so *by applying the two tests simultaneously in the routine of his work*, and the authors advise that he should do this. Such a procedure cannot injure the accepted subcutaneous method in any way, although it may modify the local intradermal swellings to some extent.

The intradermal test is unreliable when applied

a few days after a subcutaneous injection. The time limits under which this holds true have not yet been determined.

The intradermal test appears to have some modifying effect on a subsequent test by either the intradermal or subcutaneous methods, but this is not so pronounced as that produced by the usual subcutaneous injection.

The thermal reaction which accompanies the intradermal injection usually subsides in twenty hours, but it seems desirable not to apply the subcutaneous test for several days after the intradermal. The longer the interval the better.

Cattle in a very thin, starved condition are not suitable subjects for any form of the tuberculin test.

Cattle having small, latent, or arrested lesions will sometimes react to the intradermal and not to the subcutaneous test. This suggests the possibility of differentiating between latent and acute infections by combining the two tests, but the authors have not been able to put the idea into practical use.

Some tuberculous cattle react locally to the intradermal test, but fail to react thermally to the subcutaneous test, while others which react thermally fail to react locally. Clearly, then, it is necessary to use both tests in order to detect the maximum number of reactors.

Finally, though the authors warmly commend the intradermal test to those who will acquire the skill and experience necessary for its application and interpretation, they nevertheless consider that, *in the hands of an inexperienced man*, it is not so reliable as the subcutaneous or ophthalmic methods.

In *swine*, the intradermal test is very satisfactory. The reactions are usually larger in size than in cattle. A dose of at least 1-5th c.c. should be used. The injection may be made either into the skin of the edge of the ear, or at the base of the ear. In the former place the swellings are very easily seen, but they are often larger in the latter. Tuberculous swine often show a thermal as well as a local reaction to 1-5th c.c. doses of a 10 per cent. solution of alcoholic precipitated tuberculin. At the University of California Hog Serum Laboratory, the intradermal test is now used as a matter of routine upon all swine purchased.

Mercurial Poisoning in Horses.

Aulich reports (*Zeitschr für Veterinärk*) the following observation. Five working horses were found to be infected with lice; so the whole of the stud, numbering sixty-three horses, were treated with mercury after the following manner. The skin was first thoroughly washed with a 6 per cent. acetic solution, the mercurial dressing was then spread over the body with the curry-comb, and the animals were rugged up and kept till the next day with their heads tied up.

The preparation used was mercurial "blue ointment," three parts of which were diluted with five parts of linseed oil. About 30 grammes (= about ʒviiss.) of the mercurial ointment were used upon each horse. Ten days later the washing and the mercurial application were repeated. Aulich has often practised this method without any ill effects, and has obtained the best results from it.

On the 23rd December, two horses which had undergone this treatment on the 9th and 19th December showed diarrhœa and refused their food. The mucous membrane of the mouth of one of these horses was bluish-red and swollen in places, and the tongue showed considerable deposits. The mucous membrane of the lips showed numerous millet-sized erosions. The pulse was very weak, and numbered 90 to 100; the respirations were increased to 20 per minute; and the temperature was a little over 104 deg. F. Death from paralysis of the heart followed in a few hours. The other horse was less severely affected. From the history of the illness and the post-mortem examination of the horse that died, Aulich concludes that both animals suffered from enteritis, which is attributable to acute mercurial poisoning. Probably poisoning took place from the horses licking their own bodies or those of neighbours. Upon the hypothesis, Aulich records the case as showing that to tie up a horse's head for twenty-four hours does not suffice to prevent the licking off of skin dressings and its deleterious results.—(*Berliner Tier. Woch.*)

An Observation upon Bovine Epilepsy.

A. Izaak reports (*Allatorvosi Lapok*) a case of genuine epilepsy, presenting some peculiar features, which he observed in a heifer of ten months old. The epileptic spasms which occurred naturally generally appeared before feeding. Izaak found, however, that spasms could be induced artifically by *suddenly* exposing the animal to a *strong* light.

Gently applied and progressively strengthened light was without effect. When *one* eye only was *suddenly* exposed to *strong* light, the epileptic spasms appeared; and, when the animal was under the influence of atropine, a less powerful light sufficed to induce the spasms. During the epileptic attacks the temperature rose about 2·7°F., and the frequence of the pulse and respirations was also increased. The temperature sank to the normal in fifteen minutes, the pulse-rate in five minutes, and the respirations in ten minutes after the attack.—(*Berliner Tier Woch.*)

(Nothing is said of the history or sequel of the case.—*Transl.*) W. R. C.

Horses in Warfare.

The War Office deems it unnecessary for charitable societies to augment the veterinary work already arranged for by the Army authorities. Every Cavalry regiment, British and foreign, has its complement of veterinary surgeons, who go on to the field as soon as it is clear of fighting, shoot the horses permanently injured, and make all efforts to save those temporarily disabled.

It is understood that London horse-owners have supplied about 16,000 horses for Army purposes in the present emergency.—*The Times.*

SARCOPTIC SCABIES OF THE HORSE.*

Report by Col. E. R. C. Butler, A.V.S., F.R.C.V.S.

I make no attempt to give a detailed general survey of the disease, but confine my report to some clinical points.

In a well-fed, well-groomed, and well-conditioned horse the symptoms may be comparatively trivial. It may not be till the disease has existed for many months that it is thought necessary to consult the veterinary surgeon. The patient will have a slight eruption, will enjoy grooming, will lean on the brush, and will show gratification by the movements of his lips; but these may not be recognised as signs of a disease. The eruption may be lightly spoken of as "humour," the pleasure shown when brushed is considered a normal habit, and the more attention that is paid to grooming and the general toilet of the stable the more slowly will the disease spread, and the slighter will be the symptoms displayed. Some such cases appear to acquire a tolerance of the irritation and to harbour the parasite without great inconvenience to themselves, whilst they remain a potential source of infection to others.

On the other hand, when the opposite conditions prevail, when overwork and underfeeding combine to impoverish the tissues and lower the vitality of the patient, the symptoms become more pronounced; and if in addition the animal is ungroomed and the spread of the parasite completely unhampered, they are extremely severe. The irritation is very marked; the constant rubbing and biting which is practised to allay it produce excorations and inflammation of the skin, which becomes thickened and wrinkled on the neck and shoulders, and perhaps on the elbows, ribs, and stifles; the case loses flesh and may have a fatal termination.

This last is the picture presented by the text-books; it is the picture of the disease under war conditions; but I think it necessary to draw particular attention to the very modified train of symptoms which may be found in well-cared-for animals.

Diagnosis can only be established with certainty by actual demonstration of the parasite. A naked-eye diagnosis may be erroneous. Several methods for the detection of the parasite have been described; one is so much better than the others that I depend upon it solely. This is to scrape a portion of the suspected area till blood oozes; to place the material obtained in a solution of liq. potassæ until all epithelium and hair are satisfactorily broken up, to add a small quantity of glycerine, and examine with a low power. Sometimes it may be necessary to examine many specimens, but it is a simple and successful method.

I do not undervalue the naked-eye appearances as aids to diagnosis, but they are not to be depended upon alone. I have seen cases considered to be simple eczema proved to be scabies, and a case which was thought to be scabies turned out to be a form of non-parasitic eczema.

There is a possible source of error even in microscopical diagnosis. Acari, other than those of scabies are to be found on the skin of the horse, and at least two varieties cause great irritation. Examination of sweepings from a forage barn, or the dust of old woodwork, will disclose many varieties: and the same may be found in groomings from healthy horses. It is not a matter of great difficulty to differentiate them from the sarcopt of scabies, but it is necessary to make accurate observations upon them, for they are very frequently met with. As a general rule, and apart from their special characteristics, it will be found that such accidental acari are much more transparent than the sarcopt, and the chitinous folds of the skin are more faintly marked. Dermanyssus of the fowl and pteronyssus of the sparrow or linnet produce great irritation of the horse's skin. The latter of these I have met on three occasions. The shape and size of the parasite makes its differentiation easy, but as the irritation produced persists for a considerable time, and the consequent rubbing of the patient may cause excoriations and eczematous weeping of the skin, it is necessary to be accurate in the diagnosis of the affection.

The Spread and Recurrence of the Disease.

The conditions described under "Symptoms" affect the spread of the disease in the most marked degree. In stables where horses are separated from each other it may be very slow. It even occurs that an outbreak may be confined to a solitary case, although it may have existed for a considerable time; and this is naturally more likely to happen in private stables, where each horse has its own attendant and equipment. In public stables, where the separation of individual horses is not so complete, and where constant changes of men and stable gear are more prevalent, the number of cases found affected in any given outbreak will generally be proportionately greater; and under war conditions, when animals huddle together and rub against each other, and when, moreover, infected equipment may be frequently transferred from horse to horse, spread is very rapid, and a large percentage becomes affected.

I do not propose to labour those details of transmission which are familiar to all veterinary surgeons, but I wish to invite your particular attention to what I may call "recurrences." An annoying feature of the disease is the discovery of a fresh case just as we are congratulating ourselves that the outbreak is overcome, and I have seen it happen at an interval of three months after the last case had been considered cured. These recurrences are, I think, simply due to the escape of some unusually hardy or fortunate individual or individuals which manage to carry on an existence without attracting attention until conditions are favourable to them.

Certain of my colleagues hold that such recurrences are caused by fresh infection from parasites which have contrived to exist apart from a host, and some of the sarcoptidæ are certainly able to do so for long periods. Goodall records a case of dermanyssus of the fowl, which, having devoured its companions, was found alive with unhatched eggs in a sealed box after many months; and Stockman has observed the psoropt of the sheep to live for six weeks apart from the animal: the longest recorded period for the sarcopt of the horse is twenty-eight days (Gerlach). I do not, however, think it necessary to argue as to the possibility of separate existence in order to account for these "recurrences" as a rule. Imagine a case infested with many thousands or millions of acari; it is quite possible that a single ovigerous female escapes destruction, or even that fertile eggs may survive, though we may have been most conscientious in our methods. It might, then, be a considerable time before any apparent symptoms were produced, and if the opinion previously expressed, that irritation may not necessarily be very marked, is correct, such a case would possibly escape detection for three months or more.

Treatment.

In the choice of acaricides we have to consider their effect not only on the parasite, but on the patient. Partial or perfunctory dressings may palliate the case but will not eradicate the disease. The only safe method is to dress the animal all over, and the remedy should consequently irritate the skin as little as possible, but

* Presented at the Tenth International Veterinary Congress, London, 1914.

maintain its toxicity as long as required. Any application which causes severe irritation masks the disease and renders future observations more difficult. Watery dressings are not nearly so effective as greasy ones; greasy applications are difficult to remove, and if at all rancid blister the skin. Volatile substances do not retain their toxicity long enough to be useful. My own preference is for a mixture of sulphur, bicarbonate of potash and a bland oil. It is notideal, but it is successful if thoroughly applied. In a few cases it causes irritation of the skin, but on the whole it does less damage than any other really effective dressing I have seen, and it can be relied upon. Previous to application the case should be clipped; the dressing should be left on for a week and gentle inunction practised daily. The patient should be well fed.

The disinfection of the stable and the animals' equipment must be thorough to the minutest detail, and carried out at the time the dressing is applied.

In dealing with outbreaks in large bodies of horses, it is most necessary to have all details of treatment carried out systematically, so that no point shall escape thorough attention. Constant individual inspection and close clipping of the coat for a considerable period after treatment are also essential. The greatest factor in success is the personal element.

THE CHILLED BEEF AND FROZEN MEAT ESTABLISHMENTS IN THE ARGENTINE.

REPORT BY T. D. YOUNG, M.R.C.V.S.

Concluded from page 128.

MEAT INSPECTION.

This is the most important part of the report, as it is a description of the work I was invited to inspect.

Meat inspection in the Frigorificos of Argentina is carried out, as in all continental countries, entirely by veterinary surgeons (all of whom are Doctors of Veterinary Science of Argentina) with lay assistants, who are all officers of the Direccion General de Ganaderia, the equivalent of the Board of Agriculture of England. The Minister of Agriculture is the President, the Chief of the Staff is Dr. Jóse Leon Suarez, the Chief Veterinary and Executive is Dr. R. Bidart, and the Chief of the Meat Inspection service is Dr. N. Suarez, who at the time of my visit was studying the meat inspection methods of the United States of America. He returned *via* London to see the system of meat inspection as carried out within the City and Port of London.

It is right to make clear at the beginning of this report that the Government of Argentina accept fully all responsibility for the condition of meat leaving the Frigorificos. A stamp is placed on every quarter of beef, showing that it has been inspected by a Government officer; further, when any diseased meat or offal is discovered in Smithfield Market, the responsibility rests entirely with the Government and its officers. The responsibility of the officers in charge of meat inspection at these Frigorificos is very great, as will be seen by the number of animals slaughtered per day.

The following figures were supplied by the managers of the various Frigorificos:

DAILY SLAUGHTER OF ANIMALS (SUNDAYS EXCLUDED).

Frigorifico.	Cattle.	Sheep.	Pigs.	People employed (about).
La Blanca	1000	...	...	900
La Negra	1050	2550	15	2000
La Plata	1500	5500	...	2900
Campana	900	2500	...	1200
Las Palmas	600	3000	...	900
Frigorifico Argentino	600	3000	...	900
Zareta	600	...	...	500
Totals	6250	16,550	15	9300

The Chief of the Direccion General de Ganaderia has very kindly supplied the following figures respecting the numbers of animals killed and the percentages found affected with disease, for the year 1912:

CATTLE.

	Frigorificos.	Saladeros.
Totals	1,368,000	350,316
Tuberculosis	4 per cent.	1·3 per cent.
Echinococcus Veterinorum	25 „	26 „
Actino Bacillosis	6407	12
Jaundice	1467	101
Various diseases	5463	4623

445,330 of the above were used for local consumption.

PIGS.

	Frigorificos.	Bacon factories
Totals	8922	5117
Tuberculosis	19·3 per cent.	17·8 per cent.
Trichiniasis	2·5 „	2·5 „
Cysticercus Cellulosæ	·30 „	·30 „

SHEEP.

	Frigorificos.	Saladeros.
Totals	3,217,367	171,504
Caseous lymph adenitis	3·6 per cent.	1·8 per cent.
Jaundice	1713	386
Echinococcus	28·3 per cent.	26·8 per cent.
Distomatosis.	2·4 „	2· „
Various diseases	20·25 „	26·1 „

553,555 of the above were used for local consumption.

I give in appendices the legal powers under which the officers perform their duties, also special instructions issued by the Direccion General de Ganaderia to Inspectors as to the degree of disease rendering carcases or parts of them unfit for human consumption.

All the inspectors, although they are officers of the Government, are practically paid by the owners of the Frigorificos, because the latter are charged by the Government a certain sum for each officer supplied. In the Argentine Republic the owners of the Frigorificos pay to have the meat inspected, but have returned to them all unsound food, it being put into the digesters under supervision, while in this country the Local Authorities supply meat inspectors free of charge, but in general (some places excepted) retain all unsound food seized. A further very great difference exists between the two countries in that the Government in Argentina accept full responsibility for the inspection of the meat, while in this country the owner of the meat is supposed to have sufficient knowledge of disease to prevent him exposing any unsound meat for sale for human consumption, and the inspection is carried out on the detective principle, that is to say, the inspectors look for unsound food, and in many cases prosecute the owner of the meat if he has exposed for sale, prepared for sale, or deposited in any place for the purpose of sale, meat which is unfit for the food of man.

The Frigorifico owners must provide suitable Detention Rooms in which all doubtful carcases may be placed until a final decision is given on them. In addition, office accommodation and laboratories must be provided for the use of the Veterinary Inspectors and their assistants.

During 1912-13 the undermentioned beef was found affected with tuberculosis in the Central Markets:—60 hindquarters; 18 forequarters; 14 top pieces; 4 flanks; 1 aitch bone; 5 rumps; 1 loin.

As a result of complaints made from the Corporation of London as to the above diseased meat having been found in the Smithfield Markets, the Minister of Agriculture considerably increased the number of Inspectors at the Frigorificos.

INCREASE OF INSPECTORS.

Frigorifico.	1911. V.S.	1911. Assist.	1914. V.S.	1914. Assist
La Blanca	4	4	8	9
La Plata	5	2	9	10
La Negra	5	5	10	13
Campana	2	4	3	6
Las Palmas	2	3	3	6
Frigorifico Argentina	2	2	...	...
Zarete	2	4	4	4
	22	24	37	48

I was informed that a proposal to appoint other additional officers was under consideration, due to an increase in the number of animals being slaughtered at the Frigorificos and the desire of the Minister of Agriculture and his responsible officers that the work should be done in a manner thoroughly satisfactory to the uthorities of the countries to which meat is exported.

From practical experience I estimate that an inspector can satisfactorily examine 100 beef carcases or 500 sheep carcases per day of 8 to 10 hours. If he has to do more than those numbers he becomes tired at his work, which is monotonous, and will probably miss some lesions of disease. Taking these figures as a basis, the following analysis shows a very great difference in the allocation of officers in the Frigorificos:—

	Animals killed per day.	No. of men necessary.		No. of men on duty.	
La Blanca	1000 cattle		10	17	+7
La Plata	1550 „	15	26	19	−7
„	5500 sheep	11			
La Negra	1050 cattle	10	15	23	+8
„	2550 sheep	5			
Campana	900 cattle	9	14	9	−5
„	2500 sheep	5			
La Palmas	600 cattle	6	12	9	−3
„	3000 sheep	6			
Zarate	600 cattle	6	6	8	+2
	Totals		83	85	

Note.—Frigorifico Argentina not included.

It may be explained that some of those places work only four days and some only two days per week during the slack season, but in any efficient system of meat inspection it is necessary to provide for the maximum and not to rely on the minimum requirements. Thus if animals are killed more quickly than the inspectors can properly examine the carcases and organs, and diseased meat is subsequently found, the blame is with the system more than the inspectors, and here it may be noted that the foregoing figures show equal credit to the assistant inspectors as examining the same percentage of cattle and sheep as the veterinary surgeons, although the Board clearly state that the assistant inspectors are not held responsible.

It may be argued that any inspector can examine more than 100 beef carcases and 500 sheep carcases and offal per day, that, of course, depends entirely upon the percentage of disease found among the animals. Personal experiences of Argentine stock at the Deptford Cattle Market, and observations as to the percentage of disease found in the Argentine offal, convince me that the numbers previously alloted to each inspector is the maximum that should be given in order to secure efficient inspection.

All the veterinary surgeons are graduates of either Las Palmas or Buenos Aires Veterinary Colleges, both of which are affiliated to the Buenos Aires University.

The assistant inspectors are men selected from practical butchers when they can be obtained, if not, then from men who have had experience in the handling of meat. They are trained by the veterinary surgeons, but do not pass any examination, and further do not hold certificates as proof of their knowledge of the duty entrusted to them, although I was informed that they did not pass or condemn any doubtful meat, but simply called the attention of the veterinary surgeons to abnormal appearances in carcases and organs.

THE SYSTEM OF MEAT INSPECTION.

The meat inspection and hygiene in each Frigorifico is under the entire control of a chief veterinary surgeon, who has under him a staff of veterinary surgeons and lay assistant inspectors.

ANTE-MORTEM INSPECTION

The owners of the Frigorificos must give at least twenty-four hours' notice prior to the arrival of the animals at the corrales as to the number expected and the district from which they are arriving. If from a public market, a veterinary certificate stating that the animals are free from contagious disease must accompany them and be handed to the chief veterinary officer at the Frigorifico. On arrival of the animals they are inspected, and any apparently doubtful are at once removed, either for careful observation or immediate slaughter. If the latter, a post-mortem examination is made in a special slaughterhouse.

If the disease is of a contagious nature, *e.g.* anthrax, the carcase and all organs are at once destroyed, and everything which has been in contact is disinfected, the remaining animals are kept under careful observation until they are slaughtered.

CARCASE EXAMINATION.

Immediately the carcase of a bovine animal is hoisted from the ground, a veterinary inspector with an assistant takes on the examination of the organs as follows:—

Head and Tongue. The palates are examined, then the lymphatic glands (retropharyngeal and submaxilliary) incised.

The lungs are palpated, the glands (bronchial and mediastinal) incised.

The heart is extracted from the pericardium and examined.

The liver is palpated and the hepatic glands incised. If any abnormal appearances are observed in the organ an incision is made to ascertain its nature.

The stomach is examined for evidence of disease and the lymphatic glands incised.

The size and appearance of the spleen is carefully noted.

The appearance of the intestines is noted, and the chain of mesenteric lymphatic glands is incised.

Generative Organs. Appearance is noted, and, if necessary, incisions are made.

Carcase. While the organs are being examined, the carcase is sawn into two halves. The inspectors now direct their attention to these portions, the bones of the vertebræ, etc., are noted, then the serous membranes. If all the organs and carcase appear normal, the organs (tongue excepted) are passed. The tongue is washed, hung up and again examined by another inspector, who

notes if the lymphatic glands have been incised and that no lesions are apparent, as it is possible to fail to observe a small lesion if it be covered with blood at the first examination.

The carcase is pushed along the rail on which it hangs, and after being carefully washed and trimmed, it is again examined by another inspector in order to look for lesions which may have escaped the observation of his colleagues. If no lesions are found at the second examination the carcase, now in two sides, is passed, stamped and pushed along towards the entrance to the refrigerators.

Sheep.

Immediately the carcases of sheep and lambs have been "dressed," that is, skinned and washed, the veterinary inspector and assistant examine the "pluck," which consists of the lungs, heart, liver and spleen; then the carcase by observing the serous membranes and palpating the parts containing the precrural inguinal and prescapular lymphatic glands. If the organs and carcase are free from disease they are passed, and the carcase is then put on the "grading rail," stamped, and subsequently placed in the refrigators.

Carcases free from disease, but too poor in quality for freezing, are sent to the canning department.

Pigs.

Very few pigs are killed in the Frigorificos, and those only for local consumption. After the "pluck," that is the lungs, heart and liver, has been detached from the carcase, the veterinary inspector and assistant examine the lungs by palpating them and cutting into the lymphatic glands. In a similar manner the liver is examined and the appearance of the heart is noted.

The carcase is then examined, the appearance of the serous membrane noted, the lymphatic glands of the head incised and portions of the carcase incised for special examination for trichina; if the carcase and organs are normal they are passed, stamped and loaded into vans for removal to the city shops.

The foregoing description applies to normal carcases. Argentine animals are very free from diseases (aftosa and parasitic diseases excepted).

From personal experience of them at Deptford market, examination of imported offal, and observations at the Frigorificos, the undermentioned diseases are most common amongst the animals:—

Cattle. Actino-bacillosis.
Actinomycosis.
Distomatosis.
Echinococcus veterinorum.

Sheep.	*Pigs.*
Caseous lymph-adenitis.	Cysticercus cellulosæ.
Distomatosis.	Tuberculosis.
Echinococcus veterinorum.	Trichina.

Carcases exported from Argentina to Holland must have the lungs, liver and spleen left *in situ*, and I was informed that only a small percentage of carcases were found suitable for these requirements, the carcases being generally free from disease, but one or more of the organs showed lesions, generally parasitic.

CARCASES AND ORGANS AFFECTED WITH DISEASE.

Actino-Bacillosis. This disease is generally localised, the inspectors condemn the affected organs and pass the carcase.

Actinomycosis. This disease is also generally localised to the head and tongue, or both: if no other evidence exists in the other organs or in the carcase, the affected organs are condemned and the carcase passed.

Distomatosis. Every organ showing lesions of this disease is sent to the digester.

Echinococcus Veterinorum. This is a very common disease, animals from certain districts are affected to the extent of 90 per cent.: all affected organs are sent to the digester.

Tuberculosis. This disease in Argentina, as in every other country, necessitates careful examination of every carcase and organ. The method of examination has already been described, it is now necessary to describe how carcases, etc., are dealt with, when tuberculous lesions are observed.

Extract from Appendix 1.—A statement by Dr. JOSE LEON SUAREZ as to the qualifications, etc., of the meat inspectors and special instructions given to them.

The veterinary inspectors are all graduates of the La Plata or Buenos Aires Universities, having a degree of Diploma in Veterinary Medicine. The assistant inspectors are generally chosen from among practical men engaged in the Frigorificos.

The veterinary inspectors will personally examine the lungs, liver, pleura, and by palpation and cutting into the lymphatic glands they will with their assistants pay special attention to the heads and tongues, cut into the submaxillary and pharyngeal lymphatic glands, they will also examine the abdominal cavity and its contents, cutting into the mesentericglands.

The carcases and viscera will be immediately condemned when affected with generalised tuberculosis, all the knives, etc., used on such a carcase and viscera will be changed, and the men who have handled the affected pieces will change their coats and disinfect their hands.

The carcases affected with localised tuberculosis will be placed on one side of the slaughterhouse for further inspection.

The veterinary inspectors will see that the heads and viscera with tubercular lesions or lesions of other diseases are carried away in special hand trucks and will not allow the same to be carried away by any other means or dragged over the floor of the slaughterhouse.

The following instructions specially refer to the degree of tuberculosis rendering carcases and organs unfit for human food, also to localised tuberculosis.

Total Seizure.

1. In generalised tuberculosis, *i.e.*, when there are important tubercular lesions in the organs of both cavities, thoracic and abdominal.
2. When lesions exist on one of the serous membranes, and there are also foci in the organs of both cavities.
3. In the case of tubercular lesions, even if small, if accompanied by emaciation.
4. When there are lesions in the muscles or in the intra-muscular lymphatic glands or in the bones.
5. In all cases of miliary tuberculosis.
6. When the generalisation of tuberculosis is shown by miliary eruptions in all the viscera and particularly in the kidneys, spleen and lungs.

Partial Seizures. Localised Tuberculosis.

1. When the lesions are confined to either the abdominal or thoracic cavity, small in extent and not acute.
2. When lesions of the organs exist in both cavities and are small in extent, not acute.
3. When the lesions are only observed in the lymphatic glands of the head and tongue.

Note.—It is prohibitive to send to the freezing rooms carcases or parts of carcases in which tubercular lesions have been observed, even if the disease be localised and owing to its distribution it cannot be definitely presumed that it is localised infection, with no relation of continuity with adjacent regions.

A system of "skewer indicators" is in operation. The following is a description of how they are used :

Colour.	Position.	What is indicated.
White	Vertical	Submaxillary gland.
"	Horizontal	Pharyngeal gland.
Red	Vertical	Lungs.
"	Horizontal	Gland.
Violet	Vertical	Liver.
"	Horizontal	Gland
Green	Vertical	Mesenteric gland.

Combinations of colours explain themselves—White, red, violet, and green indicate that the head, lungs, liver, and mesentery are tuberculous. The skewers are put firmly into the subcutaneous tissue of the brisket.

The two sides of beef are pushed along the rails to be washed, trimmed, and wiped dry. After this has been done another inspector examines the serous membranes, all lymphatic glands, except the popliteal and the kidneys, then noting by the skewers what organs are diseased he forms his decision as to the disposal of the carcase.

Carcases affected with localised tuberculosis are said to be retained for local consumption, or sent to the canning department, the affected parts carefully examined, the meat being cut into small portions, and all deep-seated glands incised. All carcases affected with "generalised tuberculosis" are sent to the digesters.

Any carcases showing that the animal has been injured are detained for further inspection. The injured parts are cut out, and the sound parts are sent to the canning department, and any very yellow-coloured or poor quality carcases are also sent to the canning department.

Foot-and-mouth disease. I was informed that no animals affected with this disease were admitted to the Frigorificos, but that animals did sometimes arrive apparently healthy, which after slaughter showed lesions on the head and tongue. If the lesions were healed the tongues were sent to the canning department. If the lesions were only healing, the tongues were sent to the digesters.

Sheep.

Caseous Lymph Adenitis. A very large percentage of the sheep in the Argentine Republic are affected with this disease. If it is found in the organs these are sent to the digester, and the carcase passed. If both carcase and organs are extensively affected, all are sent to the digesters. If the disease is localised to one centre in a carcase, that portion is cut out and sent to the digester, the remaining portions are sent to the canning department.

All sheep carcases exported to France must have the plucks left in them.

Distomatosis and Echinococcus Veterinorum.—All organs affected with this disease are sent to the digesters.

Injured and Yellow Carcases. The same remarks apply as in the case of beef carcases.

Pigs.

Cysticercus Cellulosae.—Carcases affected with this disease are sent to the digester ; some authorities state that if the pork is salted or placed in refrigerators at a low temperature for some time, it can be used as fit for human food.

Trichina. All carcases affected with this parasite are sent to the digesters, also all organs.

Tuberculosis. The method of dealing with carcases and organs affected with tuberculosis is similar to that in operation in the city of London.

1. If the disease is entirely confined to the organs, is not miliary and is small in extent, the affected organs are destroyed and the carcase passed.

2. If the disease is confined to the head and cervical region, that portion is destroyed and the remaining portion is passed, after the carcase has been chopped down, the serous membranes, lymphatic glands, bones, and kidneys carefully examined and found free from disease.

3. If the disease affects the organs, or even only one organ, and lesions are observed in the carcase, no matter how small in extent, then the carcase and organs are destroyed

MEAT SENT TO THE CANNERIES.

All meat sent to the canning department is examined and passed by the inspectors, who are also in charge of those departments.

The meat is boned, salted, cooked, filled into cans by machinery, then sent to the Process Department, the air exhausted by means of a vacuum pump, then passed on to the "boil off tanks," where they are finished, taken to the "shower bath," cooled, dried, lacquered, and labelled.

I selected tins from the various kinds in stock ; these were opened and found in every way satisfactory. The veterinary inspectors stated that samples were taken from time to time to time for the purposes of analysis.

The making of meat extract was carefully observed ; the whole process from the inspection of the meat in the slaughterhouse to the finishing of the extract was in every way satisfactory.

GENERAL REMARKS.

In the analysis of inspectors and assistants to the number of animals slaughtered daily, it will be observed that even when the assistants are given credit for examining as many carcases and organs as the responsible inspectors, there is only enough to meet demands, but it must be remembered that according to Dr Suarez, the assistants have no power to give a decision on a doubtful carcase, etc. Thus in every case where a doubt exists as to the soundness of any article a responsible inspector must deal with it, that being so, the number of responsible inspectors is too small even when all are at work.

The chief inspectors do not always work, but generally supervise, therefore, they ought to be deducted from the number, then allowance must be made for men on holiday, sickness, etc. ; when this is done it will be evident that the number of inspectors *pro rata* to the number of animals killed daily is as already stated, too small.

It is essential in the administration of meat inspection to make sure that animals are not slaughtered quicker and in greater numbers than the inspectors can properly examine all carcases and organs, and in my opinion, this has been the cause of diseased quarters of beef arriving at the Central Markets.

A considerable improvement can be made by giving the assistant inspectors a full course of training at some Institute and requiring them to pass an examination for a qualifying certificate, then they could be given more responsibility and the veterinary inspectors could devote more time to the re-examining of carcases and offal after they had passed the assistants instead of devoting their time to "ground work," that is, examination of offal on the floors.

The salaries paid to the veterinary surgeons and assistants considering the high cost of living in that country, are, in my opinion, too small to attract and keep in the service the best class of men. In stating this it must be understood that I do not cast any reflection on the present staff, but desire it to be made clear that in the very tiring work of meat inspection

in slaughterhouses a good veterinary inspector, unless well paid, is very apt to get tired of the work after he has become well trained and experienced, and seek a new sphere; also when good men in the butchering trade are earning more money than is offered to assistant inspectors they are not likely to be tempted to join the meat inspection service.

Disease in Tongues

I ascertained that previous to 1913 the heads and tongues of bovines were cut off immediately after the animals had been bled and the carcase conveyed to the dressing place, thus all connections between these organs and the carcase from which they had been detached was entirely lost. This has now been remedied by leaving the heads attached to the carcases until all the other organs have been examined so that if disease be found in the head or tongue, special attention is directed to the carcase and *vice versa*.

I also ascertained that until complaints reached Argentina from London in 1913, the submaxilliary glands of tongues were not incised, now instructions are given that all these glands must be examined. I watched the work being done and it appeared satisfactory. Mistakes may occasionally occur in that a small lesion of actinomycosis or tuberculosis may be unobserved in a gland, due to the fact that a considerable amount of blood is always present in the region of the submaxilliary and pharyngeal glands after the animal has been bled, this comes in contact with the knife which is used to incise the glands and the blood may for the time being obscure such a lesion.

In several of the Frigorificos tongues in boxes were on request brought out from the refrigerators, then thawed out, and I found, to the surprise of those concerned, that some of the lymphatic glands had not been incised, also that in some of the tongues that had been properly examined, the glands could not be seen as they had been pressed down out of sight by the tongues being placed in a mould so that they might set in proper shape; thus, thawing out of the tongues would be necessary in England before it could be ascertained that the glands had been examined at the place of slaughter.

It was suggested that after the glands had been incised, skewers should be put behind them in order to keep them external and visible until the tongues were "set" and then withdrawn. This has been done, and the work of the inspectors in the City of London made much easier, and it is hoped that this arrangement will be to the satisfaction of all other inspectors in this country concerned.

Special attention was also directed to the examination of the parotid glands in ox cheeks.

Disease of Beef.

As previously stated most of the quarters of beef found diseased in the Central Markets, showed lesions in the ischiatic, precrural and prescapular lymphatic glands; after complaints were made the majority of the lesions in hind-quarters were found in the ischiatic glands only. This gland has not very often been found diseased in British cattle, and in ordinary examination is not always incised.

Statements were made to the effect that it was very difficult to examine those glands in a carcase. This matter was fully discussed at the Frigorificos and attempts made to cut into the hind-quarters, so as to examine both the ischiatic and precrural lymphatic glands without in any way injuring the quarter of beef; a little experience showed that this could easily be done in every case, and one of the inspectors in the Smithfield and Argentine Frigorifico deserves mention as being especially clever at this work and capable of demonstrating to all concerned how it can be done. If this work is done as I saw it can be done, then every quarter of beef should arrive free from disease, the human element being taken into consideration and allowance made for occasional mistakes.

At the Conference in London held some few years ago, a recommendation was made after disease was discovered in Argentine meat, that no meat should be exported to London from any carcase which showed lesions of tuberculosis, even if confined to the organs, and subsequently, information was received that this recommendation was being carefully put into effect, but in my observations I found that such was not the case in every Frigorifico, and on enquiries I was told that in some cases 15 per cent. of cattle showed evidence of the disease, and that where 1,500 cattle were killed daily, it would mean retaining for canning purposes or local consumption over 200 carcases per day.

On referring to the figures supplied for 1912 it will be seen that the average number of cattle found affected with tuberculosis is 4 per cent., and it is therefore very difficult to understand the difference in the statements, unless it be that the 15 per cent. applied to cattle from certain districts and the average for the whole year worked out at 4 per cent.

I observed a lack of uniformity in the examination of the parotid lymphatic glands, in some places this this was done when the head was examined, in other places after the cheeks had been cut off. It is desirable that this system should be uniform in all Frigorificos.

In the "Oleo" departments, with one exception, I failed to see any "searching" or "picking" of the fat prior to its being melted, and pieces of fat on which were dirt and blood, also small portions of the intestines adhering were present. The "searching" or "picking" is very essential, as it must be recognised that the "Oleo" is intended for human consumption, and that the temperature at which "Oleo" is produced is not sufficient to kill bacteria.

In one of the canning departments I observed a considerable number of ox tongues in the course of preparation showing lesions of "aftosa." The cooking process prevented me from ascertaining whether the lesions were acute or nearly healed. On enquiry I ascertained, as already stated, that tongues with healed lesions were allowed to be canned, but not when showing acute lesions. The temperature at which the tongues are cooked will in my opinion destroy any germs, but it is desirable that tongues showing such lesions as I observed should not be exported to the Central Markets for human food.

No pig carcases are exported from Argentina into Great Britain, but should a trade develop with regard to such carcases it will be well to remember that at least 2·7 per cent. of Argentine pigs are affected with trichiniasis.

Careful enquiries were made about "bone taint," and the consensus of opinion appeared to be that if cattle are well rested and carefully handled prior to slaughter, the carcases not allowed to remain long on the floor and the temperature of the refrigerators in which the meat is placed be reduced to at least 34° F. within fifteen hours, there will be very few cases of "bone taint."

One manager stated that when he had his cattle put through a swimming bath he was always having complaints about "bone taint," but since the bath system was stopped he had practically no complaints.

Meat Inspection Labels.

The placing of these labels on every quarter of beef and carcase of mutton and lamb is very essential in order that the Frigorifico from which a diseased quarter of beef or carcase has come may be easily ascertained, as also the name of the responsible inspector.

Objections were made by some of the managers as to the great cost and trouble in affixing the labels, a stamp being preferred.

The reply to that is an easy one, the stamp with the ink in use at the present time is quite illegible when the meat arrives in the Central Markets, and until a suitable ink be found it is very desirable that labels be used in all the Frigorificos. Art. 25, Sec. B., Appendix 3, provides for this.

This report is the result of careful observations, and is written with a full recognition of all the difficulties attending the establishment of a new system of meat inspection of great magnitude.

There is no doubt whatever that it is the desire of the Minister of Agriculture for the Argentine Republic, the Director of the Direccion General de Ganaderia, Dr. Jose Leon Suarez, and all his officers, also the Managers of the Frigorificos, to send only sound food to this country, and that mistakes made are not only regretted by all concerned, but there exists a broad-minded desire for criticism so that faults may be remedied. This is the proper spirit, and there seems good grounds for expecting that the defects of the past will gradually be eliminated.

I desire to express satisfaction of the open manner in which everything with or without fault was shown to your officer, and the attention that was given by all concerned.

To the City Corporation I desire to express my deep appreciation for their having enabled me to take advantage of the invitation of the Minister of Agriculture for the Argentine Republic, and it is perhaps needless to state that the advantages which have accrued to me in consequence of this journey will prove of great value not only to me professionally, but also as an official of the City Corporation.

Where so many gave assistance, and showed great kindness it is difficult to mention everyone, but I desire specially to refer to the following gentlemen :—

The Minister for the Argentine Republic in London.
Sir Reginals Towers, the British Minister in Buenos Aires.
The Secretary of the British Legation in Buenos Aires.
Dr. Jose Peon Suarez and his officers.
The President and Officials of the Rural Society.
The President and Officials of the Agrarian League.
Dr. Zabalo, Chief Veterinary Meat Inspector for the City of Buenos Aires.
Senors Carios Duggan and R. Hogg as representing the Estancieros.
The Managers of the Frigorificos, and especially
Dr. E. del Castillo, who by the very kind permission of the Minister of Agriculture accompanied me and acted as interpreter, and without whose aid I should have found very great difficulties.

I have the honour, etc.,
T. Dunlop Young, Veterinary Surgeon.

Appendix 5. A Suggestion.

During my investigations in Argentina I formed the opinion that a good veterinary officer attached to the British Legation in Buenos Aires could perform much useful work.

Similar officers are stationed in London acting on behalf of the Argentine, Australian, New Zealand and United States of America Governments.

So strongly was I impressed with the idea that I asked the opinion of a number of importers of pedigree stock, the managers of Frigorificos, etc., all of whom stated that such an appointment is highly desirable, and importers of live stock at once expressed the desire, if such an appointment were made, to pay a proportion of such an official's salary. These importer stated that for a very long time they have felt the wan of a good reliable expert to watch the interests of Great Britain in connection with imported animals.

The officials of the Direccion General de Ganaderia in Buenos Aires would welcome such an officer and in return for the kindness shown to their veterinary surgeon in London would extend every facility to the representative from Great Britain.

The officer could make careful observations, by visits, as to the system of meat inspectton existing and the class of meat used, also the hygiene in the canning of foods, extract of meat, powdered meat, etc., in the Frigorificos, factories, etc.

The presence of such an officer making periodical visits would greatly tend to keep the inspection and class of goods used, also the hygiene, at a high standard, and this is very necessary as no inspection of tinned foods, etc., can be perfectly carried out after its arrival in Great Britain.

That an important duty exists in this matter can be shown by the following figures which show the exportation from Argentina in 1910 :—

	Value in gold dollars.
Extract of meat	3,916,680
Tinned and salted tongues	284,352
Powdered meat	1,267,964
Preserved meats	1,208,187
Concentrated soups.	204,293

The above figures are in addition to carcases of mutton and quarters of beef (frozen and chilled) sent into this country.

The officer could attend post-mortem examinations at the Quarantine Station of pedigree animals killed after having been tested with tuberculin. This would be very important work, the results of the various testing systems could be definitely ascertained as no place could give so conclusive results as one where animals are slaughtered after showing reactions to tests.

The system of controlling contagious diseases could also be carefully watched. At present a new Bacteriological Institute is being erected in Buenos Aires, and judging from appearance will not only be one of the finest in the world, but the methods adopted in connection with the control of diseases and scientific research will be on the most modern principles.

Attempts will be made to control, and if possible to stamp out, "aftosa" (foot-and-mouth disease), such work carefully watched and reported on would prove of great value to the British Board of Agriculture.

A new Order has just been issued making it compulsory that all pigs imported into the Argentine Republic are to be tested with tuberculin. The results will prove interesting, and in many ways the officers' annual report would be of great educative value.

The officer could also direct his attention to the exportation of horses into Great Britain. It is believed that there is a great future in Argentina in the breeding of army horses for other countries.

He could also perform the same duties as the United States of America require their officer to perform——namely, attend to the disinfection of all hides, etc., exported to Great Britain. Large cargoes of maize are exported from Argentina, and it is possible that this grain, which is intended for animal food, may be put into vessels which have previously conveyed hides, hoofs, etc., and not been properly disinfected.

He could also keep the British Board in full information as to the prospects in Brazil, Argentina, Venezuela, Uruguay, and Paraguay of new districts being opened up for the supply of beef cattle. This is a very important question, owing to the prospects of a scarcity of beef throughout the world.

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange.		Sheep Scab.	Swine Fever.	
	Out-breaks (a)	Animals.	Out-breaks (a	Animals.	Out-breaks (b)	Animals.	Out-breaks (b)	Animals.	(b)	Out-breaks (a)	Slaughtered. *
IRELAND. Week ended Aug. 15	...	...	...	...	...	...	Outbreaks 2		1	6	22
Corresponding Week in 1913 ...	...	...	...	...	...	...	2		5	3	5
Corresponding Week in 1912 ...	...	...	5	10	...	...	1		...	3	5
Corresponding Week in 1911 ...	...	...	...	...	...	...	4		...	5	30
Total for 33 weeks, 1914 ...	1	1	76	955	...	...	58		380	150	739
Corresponding period in 1913 ...	...	...	...	...	...	...	96		358	106	613
Corresponding period in 1912 ...	3	3	21	213	...	...	51		262	170	1441
Corresponding period in 1911 ...	7	12	...	...	2	3	49		250	89	1507

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Aug. 17, 1914

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

INVESTIGATION INTO THE DISEASE OF SHEEP CALLED "SCRAPIE" (*Traberkrankheit* : *La Tremblante*), with especial reference to its association with Sarcosporidiosis.—By J. P. M'GOWAN, M.A., M.D., B.SC., M.R.C.P.E. Assistant Superintendent, Royal College of Physicians Laboratory, Edinburgh. Pp. 116. (William Blackwood and Sons, Edinburgh, 1914.)

The inception of this investigation is thus set out in the preface :—

"In December, 1912, Mr. J. Elliot Scott, B.SC., County Lecturer for the Border District, called the attention of the Governors of the East of Scotland College of Agriculture to the need for investigation into a mysterious sheep disease which was apparently becoming increasingly prevalent in certain parts of Roxburghshire, and which from its most striking symptom had come to be known popularly as "Scrapie." Consideration of Mr. Scott's representation led the Governors to appoint a Special Committee to take such action as might seem advisable, and I was asked by them to undertake the investigation of the disease.

The Committee thereupon approached the Board of Agriculture for Scotland, which at once expressed its willingness to provide the necessary funds on condition that it was represented on the Supervising Committee. The Committee was then reconstituted as follows : From the Governors of the College—Messrs. J. R. C. Smith, Chairman ; Principal Bradley, Dr. R. Shirra Gibb, Prof. Wallace ; and from the Board of Agriculture of Scotland—Messrs. Barber and Wood. Mr. M'Callum acted as Secretary.

Besides administering the grants made from time to time by the Board, the members of Committee have personally assisted in obtaining information regarding the occurrence of the disease, in procuring diseased animals for observation, and in other ways."

In the introduction it is stated "That the disease has existed in some of the Border Counties for the last sixty or seventy years cannot be doubted, although little has been said in public about its occurrence. It is only within the last few years, owing possibly to its ravages and the consequent effect on the value of breeding stock, that the condition has been more openly discussed. Even yet there is considerable reticence on the subject, a fact which militates against the acquisition of accurate data regarding the epizootiology of the disease. The formation by farmers and others of theories to explain the disease has further obscured the subject."

"At present it appears to exist mainly in Roxburghshire and Northumberland. The sheep chiefly affected appear to be the half-breds in the first instance, next the Cheviots, and lastly the pure Border Leicesters. Instances have been noticed in other breeds less frequently, as, for example, in the South Downs. The disease seems to affect principally sheep about two years old, although it is found at other ages. The symptoms exhibited are persistent itchiness (without any evidence of "scab") ; a gradual emaciation ; an absence of diarrhœa ; a change in gait ; a weakening of muscle power ; but in spite of all these a persistence of the appetite to the end. Two varieties of the disease are believed to exist—a variety showing itchiness, and a paralytic variety. The disease is, moreover, believed to be universally fatal, and to be transmitted from parent to offspring."

The first two chapters are devoted to the history of the disease in Britain and in other countries. In Britain there is mention as far back as 1772, and it was then stated to be "about 40 years standing in England. Continental recognition dates back to some time previous to 1804. Throughout these 30 pages the main features of the disease are noticed, and the fact that it is hereditary is evidenced repeatedly."

Chapter III. Symptoms and pathology, gives the technique employed at the post-mortem examinations, with the detailed results of the 19 cases in various stages of disease. The one common feature in the report of these cases is a concluding paragraph of which this is an example. "Sarcocysts present in skeletal muscle and heart to number of about 90 per 15 milligrammes ; none in alimentary tract (except in œsophagus), urino-genital tract, or udder." This gives the keynote to the whole report—sarcosporidiosis. In one case (7) is given a table (p. 40) showing result of microscopical examination of 35 portions, the number of sarcocysts per 15 milligrammes ranging—in the hindquarters from 10 to 159 (12 out of 18 gave 50 or more), and in the forequarters from 15 to 98 in 15 specimens. The report of this case concludes "Every organ and tissue of the body examined microscopically in sections, and the only pathological finding of importance was the presence of enormous numbers of sarcosporidia in the striped muscles and the absence of the same from the non-striped muscles."

Chapter IV. is an account of a case of scrapie seen in Germany, at the Bacteriological Institute at Halle, by favour of Dr. Raebiger. Here, again, the owner's evidence is in favour of heredity, and he says "the

disease has mostly started with two-year-old animals, and this may be looked upon as a proof that the infection results from procreation. During the first year only females were affected with the disease."

Chapter V. The structure and possible developmental stages of the sarcocyst and their relation to the spread of the disease, is a resumé of the author's histological work, and, mention of the work of some continental men in the same direction. He traces the development of sickle shaped bodies within the sarcocyst and their bursting and discharging "a mass of vacuolated material containing a large number of granules." The chapter concludes "I have enunciated the view that these chromatin granules play an important part in the transmission of the disease, both in the endogenous and exogenous spread."

Chapter VI. Here the author has collected "cases from the literature where a certain set of symptoms during life could find no explanation post-mortem, except in a generalised sarcosporidiosis," and he says "by piecing together the information, we find that cachexia, paralysis and itching have all been noted as the symptoms produced during life by an extensive sarcosporidial infection." The cases here quoted include horses, oxen, swine and mice.

Chapter VII. is devoted to the demonstration of the action of the sarcocystin, the toxin produced by the sarcocyst. This is followed by two chapters on the mode of spread from animal to animal—in carnivores; in herbivores. In the earlier of these it is shown that 1½ to 5 months may elapse between the feeding of a carnivorous animal with sarcosporidial flesh and the development of the parasite in its muscles; from this it is deduced that if they are found in young animals within these limits—especially the younger—their presence might be attributed to an infection previous to birth. The author, in the spring of 1913, failed to find the parasite in embryos from heavily infected sheep. The earliest age at which he found them was in a lamb of three months, and the sarcocysts were fully developed and very numerous. Theobald Smith is here quoted—that in experimentally infected mice 2½ to 3 months was the time taken to produce ripened sarcocysts. Applying these figures to the lambs in question would bring the date of infection at or before birth.

This is as far as the problem is taken. Much of the evidence is of a negative character, but the author set out to demonstrate that sarcosporidiosis is the cause of the symptoms and he has certainly put up a strong case.

Chapter X. Observations as to the presence of sarcocysts in the muscles of apparently healthy sheep. These refer to the presence or absence microscopically observed of the parasite in the skeletal muscles. A table shows that 818 carcases of good class were examined in a period of three months and in 264 of these sarcocysts were *not found*. In the remaining 554, 77 showed five or more sarcocysts per 10-15 milligrammes of muscle, so that about 13·92 per cent. of the infections may be classed as "heavy." There are other tables showing the districts from which these sheep were drawn; the monthly variation of infected animals: the infection in lambs: the infection in ewes over two years. There is a chapter on Epizootiology, and a concluding one with recommendations. There are 13 plates giving 13 photographic reproductions of sheep and 12 of histological details. Throughout there are numerous references to other writers, and the whole ground appears to have been effectively worked. The book must be examined to be appreciated.

An appendix gives details of a case in a sheep in which the symptoms are stated to be those of Johne's disease in cattle, and in which acid-fast bacill were found. A microphotograph of a lesion is given. A short glossary completes the work.

About Hackneys.

In the early days of the development of the Hackney, in Yorkshire and in other counties, the size was materially increased and well-nigh fixed by thoroughbred Arab and Barb blood being freely used from about 1740 to 1780. But most of the stallions advertised in those days were praised because of their ability to trot on the road at least fourteen miles in the hour. For instance, John Darby of Alby notified that his chestnut horse Blaze, 15 h. 1 in. high, was for service, and was sired by the Walcot chestnut grandsire, Spot, Halesworth horse. Of his dam, John Darby said at twelve years of age he had ridden her eighty miles in a day, and testified that he had ridden her on one occasion eighty-four miles in eleven hours, the mare performing the last mile easily. When not in foal the mare was said to be able to hunt with any horse in Norfolk. The owner gives us an idea of how the farmers used their mares in those days, by telling us this brood mare was noted in the hunting field, could also plough, and travel fast on the road. But many trotting cobs were used in Yorkshire, and there was famous there a family of this type by the name of Sportsman. Frank Maw's Sportsman was stated to be "the first trotter in Yorkshire." A horse called Quaker of Kendal, Westmorland, whose dam was got by Ironsides, trotted sixteen miles within the hour, carrying 224 lb., and eight miles in 25 min. 35 sec., carrying 238 lb. Another horse, called Farmer's Delight, a noted fast trotter, was claimed to get the best stock of hunters in the country. The farmers in those days wanted weight-carriers to travel on the road and to go across rough country, and to get them they bred Barb and Arab stallions to trotting mares of the Hackney type, then crossed again with horses of the heavy hunting sort; and these farmers liked to trot their mounts against all comers on the road. The dams and grand dams were spoken of as being by sons of the Godolphin Arab and out of granddaughters of Flying Childers, etc., but the name of old Norfolk and Yorkshire farmers' horses of the original Hackney trotting kind usually appear in the pedigrees as proof of their trotting ability.

From about 1750 the advertisements and other published data afford a fund of information about trotting bred Hackneys, stallions and mares that flourished half a century or more before, and from whom the horses then travelling were directly descended. The *Norwich Mercury* files, and later those of the *London Sporting Magazines*, are rich in facts bearing upon the old trotting Hackney horses. The word "Hackney" as applied to the weight-carrying cob or small horse of the road sort would look therefore to have dated back hundreds of years, having been in use in the eleventh and twelfth centuries. From the little trotting horses of the Norsemen, the Norfolk cobs are admitted to have sprung in a large part. The breed has been reproduced continuously from the time of the Norman conquest. The Hackney has from the earliest times been a little horse of rare courage and trotting ability, entirely distinct from the hunter and racehorse. As conditions changed, and wheeled vehicles came into use, the Hackney put his trotting ability to the test in front of heavy carriage, saddle horse riding long distances gave way to riding in carriages, and thus the thoroughbred or racing-bred saddle horse of the road found his opportunity.

* * * * *

John Lawrence, in his Treatise published in 1810, insisted that he had proved the stallion Sampson to be a son of Blaze, out of a hunting mare, and not out of a thoroughbred daughter of Hartley's Hip. The man who took Sampson's dam to Blaze had assured Lawrence that she was of unknown pedigree, but appeared

to be about three-parts bred. That Sampson had a cross of carriage or trotting blood was apparent from his character, but it did not interfere with his beating the best horses of his day carrying light or heavy weight. Many running horses in those days were bred the same way. At twenty years old he was calculated to be able to have beaten Flying Childers and Eclipse over a course, and undoubtedly have double distanced Bonnie Black. When Sampson was led out at Malton for his first race the onlookers jeered and cried that his owner was trying to win with a coach-horse. Sampson was black, and the strongest bodied horse ever raced. He was 15½ hands high, and his measurements, as taken by his owner, the Marquis of Rockingham, were: round foreleg below kee, 8½ in.; below hock, 9 in.; from fetlock joint to bend of knee, 11 in.; from bend of knee to elbow, 19 in.; and from coronet to middle of fetlock joint, 4 in.

It is because the trotting instinct was so intense in the old Hackney breed, and had been cultivated for centuries, that it was strong enough to withstand the galloping instinct of the Arab and thoroughbred blood it came in contact with during several generations. Had the Hackney blood not been so firmly established it would have been quickly bred out. Instead of this, we find it transmitting its trotting instinct to all other lines of blood. The old Norfolk trotting Hackney was a Hackney before the Arab left the Orient to mix with English blood, and so found the thoroughbred family. The old-fashioned Hackney cob was trotting races on the Roman roads in England before Columbus discovered America, and as for Canada, 500 years before its discovery Norfolk farmers were riding stout little Hackney cobs 30 miles to market, and cattle drovers were riding Norfolk cobs and Scotch Galloways from London to Aberdeen. Talk about the Hackney not being an old breed!—*Sports of the Times.*

Horses for the Army.

The Board of Agriculture have issued the following statement:—"The Board of Agriculture are in receipt of frequent communications respecting the effect of the mobilisation of the Army on the number of horses available for carrying on the farming operations of the country, and as a great deal of misconception appears to exist in respect of the number of heavy draught horses actually required by the military authorities, the Board think it desirable to publish the approximate position so far as heavy horses are concerned.

"The returns obtained by the Board in June last show that the estimated number of horses used for agriculture, including mares kept for breeding, but excluding saddle horses, carriage or trap horses, and vanners, is 793,436. The number of heavy draught horses that have been obtained recently by the military authorities from agricultural holdings is estimated at 9000, or only slightly over 1 per cent. of the whole. It is clear, therefore, that the number of heavy draught horses on agricultural holdings is amply sufficient to meet the requirements of the Army without interfering seriously with the cultivation of the land."

The subjoined was issued from the Press Bureau last night:

It would help the Remount Service if gentlemen who still have horses at grass would get them up and condition them, and inform the War Office or local remount officers when they are fit.

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange.		Sheep Scab.	Swine Fever.	
	Out-breaks (a)	Animals.	Out-breaks (a	Animals.	Out-breaks (b)	Animals.	Out-breaks (b)	Animals.	(b)	Out-breaks (a)	Slaughtered. *
GT. BRITAIN. Week ended Aug. 22	7	9					1	1	1	58	347
Corresponding week in 1913 ...	6	9			2	2	14	28	2	38	704
Corresponding week in 1912 ...	4	4	3	7	2	2	19	24		34	421
Corresponding week in 1911 ...	14	22	1	5	3	3				41	320
Total for 34 weeks, 1914	512	555	11	74	71	176	1530	2665	152	2769	28759
Corresponding period in 1913 ...	373	411			112	288	1894	3826	129	1672	22607
Corresponding period in 1912 ...	554	630	70	442	120	228	2336	5074	170	2188	28379
Corresponding period in 1911 ...	562	707	8	425	127	305			306	1737	20257

(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked:
Board of Agriculture and Fisheries, Aug. 25, 1914

IRELAND. Week ended Aug. 22	...	...	...	...	...	...	Outbreaks 1	5	3	23
Corresponding Week in 1913 ...	...	...	...	...	...	...	...	8	4	47
Corresponding Week in 1912 ...	...	...	...	3	...	...	1	...	2	13
Corresponding Week in 1911 ...	...	...	...	...	...	...	...	3	2	68
Total for 34 weeks, 1914 ...	1	1	76	955	...	...	59	385	153	762
Corresponding period in 1913 ...	...	...	...	...	...	...	96	366	110	660
Corresponding period in 1912 ...	3	3	21	216	...	...	52	261	172	1454
Corresponding period in 1911 ...	7	12	...	...	2	3	49	253	91	1575

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Aug. 24, 1914
NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

Telephones {5794 / 4836} *Victoria.*

All remittances should be addressed to H.R.H. The Prince of Wales, Buckingham Palace. These and other letters to the Fund need not be stamped.

National Relief Fund.

Treasurer: H.R.H. THE PRINCE OF WALES.

Joint Secretaries { C. ARTHUR PEARSON; HEDLEY F. LE BAS; SIR FREDK. PONSONBY, K.C.V.O., C.B.

York House,
St. James's Palace, S.W.

To the Editor,

Dear Sir,—We regret to say that the Subscription Sub-Committee of the National Relief Fund has heard of a good many cases in which use has been made of its name, or of the names of those connected with it, with the object of securing support for appeals which are quite unauthorised.

We hope you will be so good as to permit the appearance of this letter, the object of which is to inform your readers that they may be assured that any extravagant or grotesque appeals emanate from persons who have neither the authorisation nor the support of this Committee.—Yours faithfully,

C. ARTHUR PEARSON,
HEDLEY F. LE BAS,
FREDERICK PONSONBY,
Joint Secretaries, Subscription Sub-Committee, National Relief Fund.

Aug. 24, 1914.

Disinfection of the Hands.

Sorel (*Journal des praticiens*, November 8th, 1913) points out that no procedure can render the hands sterile for long. When tincture of iodine is used he recommends that there should be no preliminary washing. Iodine appears to act rather as a varnish to the skin than as an antiseptic. The author remarks that bacteriologists know that a layer of fat limits microbial invasion and that the fat secreted by the sebaceous glands of the skin is an excellent barrier in their way. To obtain the best results the hands must be preserved in their normal physiological state, that is with regard to the integrity of the skin and the fat normally secreted by the skin; to do this it is best to avoid the use of hot soap and water and friction with a hard brush, and further to avoid dissolving the natural fat of the skin by immersion in benzine, ether, or any such fat solvents, It is also suggested that before operation the hands should be smeared over with vaseline, the excess being wiped off with a sterile compress. The hands of the surgeon ought not to be exposed to cuts or bruises. There is no means of disinfecting the hands absolutely, but the foregoing suggestions are worthy of notice.—*B. M. J.*

LANCASHIRE V.M.A.

The September Quarterly Meeting has been postponed until further notice.

J. W. BRITTLEBANK, Hon. Sec.

ARMY VETERINARY SERVICE

Extract from *London Gazette*,
WAR OFFICE, WHITEHALL, Aug. 21.

TERRITORIAL FORCE. ARMY VETERINARY CORPS.

The following to be Lieuts.—A. Scotson, D. H. Rylands, J. A. G. Gosling. Dated Aug. 22.

Aug. 25.

L. A. F. Dawson to be Lieut. Dated Aug. 26.

Personal.

Mr. W. J. COLEBATCH, B.SC., (Agriculture) M.R.C.V.S., Superintendent of Agriculture in the South-East and Manager of Kybybolite Experiment Farm, succeeds Prof. Perkins as Principal of Roseworthy College, consequent on the resignation of Mr. Wm. Lawrie, M.A., B.SC., from the position of Director of Agriculture. Prof. A. J. Perkins, who for 22 years has been connected with the department, for the last 10 years as Principal of Roseworthy College, has been appointed Director of Agriculture. In the course of a statement to the press the Minister of Agriculture (Hon. T. Pascoe, M.L.C.) commenting on the new appointment, said: "In view of Prof. Perkins' promotion, Mr. Colebatch, the next senior Agricultural officer in the department, has been appointed Principal of the Roseworthy College. During Prof. Perkins' absence in Europe, three years ago, Mr Colebatch was Acting Principal for 12 months, and the Minister and Prof. Perkins are confident that he will be successful in maintaining the high standard of efficiency of the institution. The Director of Agriculture will be responsible for the South-Eastern experimental work, and in this will have the benefit of Mr. Colebatch's experience.—*Journal of Agriculture of S. Australia.*

Mr. HAROLD LEENEY has been posted as Veterinary Officer in charge of Farlington Veterinary Hospital.

OBITUARY

J. R. CHARLTON, M.R.C.V.S., Christchurch, New Zealand. Graduated, New, Edin: April. 1887.

Mr. Charlton died on July 11th, at Christchurch.

LAWRENCE JOHN FARR, M.R.C.V.S., Uffculme, Cullompton, Devon. New, Edin: Dec., 1894.

Death occurred on Aug. 20th, at the age of 42.

THE URGENT CALL FOR VETERINARY SURGEONS.

Sir,

As a member of the profession, the writer has been much interested with the views expressed as to the desirability of the President of the Royal College, putting Bye-law 92 in force at once.

A saner policy, one would imagine, would be to postpone the opening of the various schools until the present national crisis is past. With the opening of the schools, those students at present acting as locum for members of the profession who are in the Territorial force, will be obliged to return to continue their studies, and one knows that even now, in the vacation period, it is a terrible job to get a locum of any kind. What will be the further effect when the schools do re-open—even at their announced dates—let alone if they were opened now, as suggested by two eminent men of the profession? It will be far better to postpone the opening of the schools, than to open early, and to hurriedly push through Class D men as fully qualified veterinary surgeons.

With the depletion of the staffs, due to their members being in the Territorials or other regiments, and the fact that courses such as post-graduate, etc., will be attended only by few, if any, persons, while consequent upon the reopening of the schools, many practices will be left without any one to look after them—Would it not be the wisest policy to postpone the opening of our schools for an indefinite period?

A man need not be qualified to manage a practice. Without the help of students who are acting as their locums, many of our brethren would have the mortification of knowing that their practices were going to ruin, owing to their being called up for service. A nice return for those who are helping the Empire in its grave hour of need.—Yours faithfully,

M.R.C.V.S.

Sir,

I quite endorse every word that has appeared in your last issue, from "An unknown M.R.C.V.S."

I do not blame the Military Administrators for the state of affairs existing, but I lay the onus on the veterinary surgeon in the employment of the Military or Territorial Forces during peace time. This autocrat whose self aggrandisement and blind selfishness for himself, sees that plenty of work is kept for himself and his partner and pupil, that he cares not one iota for the struggling country practitioner. He and his satellites have their £2 per day of seven hours and 5s. extra for time over that. Still the cry was raised they could not get veterinary surgeons in my county and had to import veterinary surgeons from the city while my services were, like my friends—not wanted.

Who were at the drawing up of the list of veterinary surgeons, whose services were to be requisitioned on mobilisation, but those—I say without fear or favour—veterinary surgeons who were in touch with County Territorial Organisations? It lies at their door for veterinary surgeons being left out, and prevented from giving their services to the country.—Yours, etc.,

V.S. OF 25 YEARS STANDING.

Sir,

Your correspondents Messrs. Angwin and Hobday in last week's *Record* would have us believe the Government were in straits for our help. I offered my services, and have a reply that my name is noted down. Surely if there were such urgent need as alleged I would have been accepted at once. But I will readily go and act for any one who has to go and leave their practice. I am retired but as good as ever. Reply to "Retired M.R.C.V.S.," c/o *Record*, and I will communicate at once.—Yours truly,

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Sir,

I entirely disagree with the suggestion made by Mr. Trigger and Prof. Hobday—that a short session should be held at the Colleges to be followed by a special examination for Class D students. Surely it would not be fair either to existing practitioners or to the students themselves that men should be pushed into the profession without completing their proper education. Why not rather close the Colleges until the end of the war and so allow all the students to enter the forces where there is use for everyone of them, and where they would gain experience of inestimable value to them when they did get their diploma, they would never regret taking the step.

Personally, it is difficult for me to grasp that there is a shortage of veterinary surgeons, or anyhow that there need be. I write from a country town (under 10,000 inhabitants) in which there are three of us, all the right age and all capable men—if I may include myself, and each of us I am sure is anxious to do anything possible at the present crisis. In this town are stationed under 2000 cavalry to which are attached three veterinary officers, so that there are actually here within a radius of one and a half miles six veterinary surgeons.

If the A.V.C. is really short of officers why not transfer veterinary Territorial officers to the Corps (not necessarily for service abroad) and leave the Territorial work to the local practitioners who have to stay at home? Surely there is a waste—not a shortage? I remember the time when on active service that I considered myself lucky if I had anything under a thousand horses in my charge at a time. —Yours truly,

"E."

Sir,

In reading this week's *Record*, I must say I was surprised to see the small number of "wants" for veterinary surgeons. If there was a want—a great want—of men surely now they would be advertised for.

I offered my services to the War Office anywhere they liked to put me, but am too old at 40!—Yours, etc.,

"UNDER 45."

22nd August, 1914.

Veterinary Societies—Addresses.

BORDER COUNTIES V.M.S.
Pres: Mr. J. W. Hewson, M.R.C.V.S., Wigton
Hon. Sec. (pro tem.): Mr. F. W. Garnett, M.R.C.V.S., Dalegarth, Windermere
Meetings, Second Friday of Feb., June, and October

GLASGOW V.M.S.
Pres. Principal McCall.
Hon. Sec. Mr. J. D. Fulton, 83 Buccleuch Street, Glasgow

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Hon. Sec. & Treas: Mr. W. Shipley, F.R.C.V.S. South Town, Great Yarmouth

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COLONIAL SOCIETIES (*continued next page*)

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Treas: Prof. G. H. Wooldridge, F.R.C.V.S.,
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Meetings, First Friday, Mar., June, Sept. and Dec.

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Meetings, First Thursday in each month, except August and September, 10 Red Lion Square, Holborn, at 7 p.m.

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Hon. Sec. & Treas: Mr. A. C. Holl, M.R.C.V.S.
New Buckenham
Meetings, Second Tuesday, Feb., July and Sept.

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Meetings, Last Thursday, Mar., June and Sept.

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34 High Street, Dover
Meeting,

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Pres: Mr. W. P. Stableforth, F.R.C.V.S., Colyton, Devon
Hon. Sec. Mr. W. Ascott, M.R.C.V.S., Bideford
Hon. Treas: Mr. P. G. Bond, M.R.C.V.S., Plymouth
Meetings, Third Thursday, March, July and November

Irish Branch:

Pres. Mr. W. Watson, Municipal Buildings, Dublin
Sec. Mr. P. D. Reavy, Leafield, Bundoran, Co. Donegal

CENTRAL V.A. OF IRELAND.

Pres: Mr. B. P. J. Mahony, M.R.C.V.S., Maryborough
Hon. Sec. Mr. E. C. Winter, F.R.C.V.S., Queen-st., Limerick
Treas: Mr. J. F. Healy, M.R.C.V.S., Midleton

CONNAUGHT V.M.A

Pres. Mr. D. Hamilton, M.R.C.V.S., Ballina
Hon. Sec. & Treas. Mr. A. J. Moffett, M.R.C.V.S., Galway

VET. MED. ASSN. OF IRELAND.

Pres; Mr. P. D. Reavy, M.R.C.V.S., Leafield, Burdoran
Hon. Sec: Prof. J. J. O'Connor, M.R.C.V.S., R.V. Coll., Dublin
Hon. Treas: Prof. J. F. Craig, M.A., M.R.C.V.S.,
R.V. Coll., Dublin

NORTH OF IRELAND V.M.A.

Pres: Mr. J. A. Jordan, M.R.C.V.S., Belfast
Hon. Sec; Mr. J. Ewing Johnston, M.R.C.V.S., Belfast
Hon. Treas;

Scottish Branch:

Pres. Dr. O. Charnock Bradley, } Ryl. (Dick) Vet.
Hon. Sec. Prof. A, Gefton, } Coll: Edinburgh

NORTH OF SCOTLAND V.M.S.

Pres: Mr. W. Marshall, M.R.C.V.S., Aberdeen
Hon. Sec. & Treas: Mr. G. Howie, M.R.C.V.S. Alford, Aberdeen
Meetings, Last Saturday in January and August

ROYAL SCOTTISH V.S.

Pres: Mr. Reid, M.R.C.V.S., Auchtermuchty.

SCOTTISH METROPOLITAN V.M.S.

Pres: Mr. J. Riddoch, M.R.C.V.S., Edinburgh
Hon. Sec. & Treas: Mr. Jas. Henderson, M.R.C.V.S.,
Public Health Dept., City Chambers, Edinburgh

WEST OF SCOTLAND V.M.A.

Pres: Prof. John R. McCall, M.R.C.V.S., Vety. Coll. Glasgow
Hon. Sec: Mr. J. F. Macintyre, M.R.C.V.S.,
19 Bank Street, Hillhead, Glasgow
Hon. Treas: Mr. Geo. W. Weir, M.R.C.V.S.,
88 Crookston Street, Glasgow
Meetings, Second Wednesday, May, Oct. and January.

COLONIAL SOCIETIES: *(see preceding page)*

CAPE OF GOOD HOPE V.M.S.

Pres. Mr. J. D. Borthwick, M.R.C.V.S., Cape Town
Hon. Sec. & Treas. Mr. J. W. Crowhurst, F.R.C.V.S.
Longmarket Street, Cape Town

CENTRAL CANADA V.A.

Pres. Mr. Geo. Hilton
Hon. Sec: Mr. Charles Evans, Ottawa

VET. ASSN. OF MANITOBA.

Pres: Dr. W. R. Taylor, Portage la Prairie
Hon. Sec. & Treas: Mr. Wm. Hilton, Winnipeg

NATAL VETERINARY MEDICAL ASSOCIATION.

Pres. Mr. F. J. Carless, M.R.C.V.S., Mooi River
Hon. Sec. & Treas. Mr. A. Goulé, Eshowe, Zululand